

Subject : _____

Date: _____

1 الف) $\lim_{n \rightarrow r^+} f(n) - k = f(r) - k = \omega$ (1)

3 ب) $\lim_{n \rightarrow r^-} f(n) - k = f(r) - k = \omega$

5 الف) $\lim_{n \rightarrow r^+} f[n] - k = f_x[r^+] - k = f_x r - k = \omega$ (2)

7 ب) $\lim_{n \rightarrow r^-} f[n] - k = f_x[r^-] - k = f_x r - k = \omega$

9 الف) $\lim_{n \rightarrow r^+} [f(n) - k] = [f_x r^+ - k] = [\omega^+] = \omega$ (3)

11 ب) $\lim_{n \rightarrow r^-} [f(n) - k] = [f_x r^- - k] = [\omega^-] = \omega$

13 الف) $[\lim_{n \rightarrow r^+} f(n) - k] = [\omega] = \omega$ (4)

15 ب) $[\lim_{n \rightarrow r^-} f(n) - k] = [\omega] = \omega$

17 الف) $\lim_{n \rightarrow r} \frac{f(n) - k}{n - k} \xrightarrow[r^-]{r^+} \frac{9}{0^+} = +\infty$
 $\frac{9}{0^-} = -\infty$ (5)

20 ب) $\lim_{n \rightarrow r} \frac{f(n) - k}{(n - k)^2} = \frac{9}{0^+} = +\infty$

الف) $\lim_{n \rightarrow 2} \frac{2n-2}{\sqrt{n-2}}$ $\xrightarrow{2^-}$ $\frac{0}{0}$ (9)

\swarrow $\frac{2}{0^+} = +\infty$

ب) $\lim_{n \rightarrow 2} \frac{2n-2}{\sqrt{n^2-5n+2}}$ $\xrightarrow{2^-}$ $\frac{0}{0}$ $\frac{1}{+0} - \frac{2}{+0}$

\swarrow $\frac{2}{0^+} = +\infty$

الف) $\lim_{n \rightarrow 2} \frac{2n-2}{n^2-\sqrt{n+1}}$ $\xrightarrow{2^+}$ $\frac{0}{0^-}$ $= -\infty$ (10)

\swarrow $\frac{2}{0^+} = +\infty$ $\frac{2}{+0} - \frac{2}{+0}$

ب) $\lim_{n \rightarrow 2} \frac{2n-2}{[n-2]}$ $\xrightarrow{2^+}$ $\frac{0}{[0^+]} = \frac{0}{0} \rightarrow \frac{0}{0}$

\swarrow $\frac{2}{[0^-]} = \frac{2}{-1} = -2$

الف) $\lim_{n \rightarrow 2} [2n] + [-2n]$ $\xrightarrow{2^+}$ $[4^+] + [-4^-] = 0$ (11)

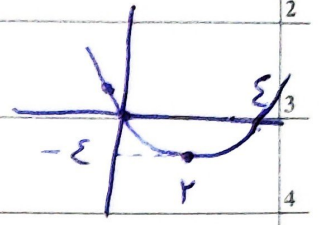
\swarrow $[4^-] + [-4^+] = 0$

ب) $\lim_{n \rightarrow -4} [-2n] + [2n]$ $\xrightarrow{-4^+}$ $2(4) + (-8) = 0$

\swarrow $2(4) + (-8) = 0$

الف) $\lim_{n \rightarrow r} [n^2 - \varepsilon n] \xrightarrow{r^+} -\varepsilon$ $-\frac{b}{2a} = r$ ⑨

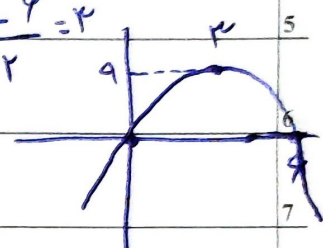
\downarrow r^- $-\varepsilon$



ب) $\lim_{n \rightarrow r} [\varepsilon n - n^2] \xrightarrow{r^+} \wedge$

\downarrow r^- \wedge

$-\frac{b}{2a} = \frac{-\varepsilon}{-2} = r$



الف) $\lim_{n \rightarrow r} \frac{(n-r)}{n^2 - r^2} \xrightarrow{r^+} \frac{(n-r)}{(n-r)(n+r)} = \frac{1}{(r+r)} = \frac{1}{2r}$ ⑩

\downarrow r^- $\frac{-1}{1} = -1$

ب) $\lim_{n \rightarrow 1} \frac{n - [n]}{n^2 - 1} \xrightarrow{1^+} \frac{n-1}{(n-1)(n+1)} = \frac{1}{2}$ ⑪

\downarrow 1^- $\frac{n}{n^2-1} = \frac{1}{0^-} = -\infty$ ⑫

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18